

## Pollution Prevention Practices in Auto Body and Paint Shops

### Minimizing Paint Waste

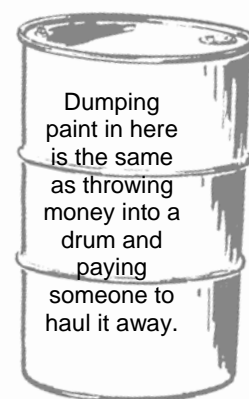
Mixing and painting operations are major sources of environmental concerns in the shop and can present some of the greatest P2 opportunities. Taking advantage of opportunities to minimize your paint wastes makes sense for your business and for the environment.

#### Why Minimize Paint Waste?

Automotive paints are expensive, and so is the cost of managing paint waste. Most paint waste must be managed as hazardous waste.

Efficient paint mixing and application will reduce:

- the amount of paint needed for each job,
- smog forming volatile organic compound (VOC) emissions,
- the volume of waste paint that must be managed as hazardous waste.
- paint overspray on the spray booth walls and filters.
- labor, materials, and disposal costs



There are a number of steps where paint waste may occur. By evaluating the painting process from start to finish, you may identify improvement opportunities that will save paint, labor, and money.

#### In the Mixing Room

##### ***Manage your inventory***

Reduce the need to throw away off-spec materials by planning, knowing your inventory and not overstocking.

- Use next-day or weekly ordering.
- Keep containers closed to reduce evaporation losses.
- Consider installing a mixing bank to keep paints from separating while on the shelf.

##### ***Color matching***

Perfecting color matches will reduce the need to respray, saving labor and materials.

- Mix in small amounts and spray out on test panels or cards.
- Compare the spray out to the vehicle in natural daylight and view the color match from all angles.
- Consider using a hand-held colorimeter or spectrophotometer that can read colors and select a color match from the paint manufacturer's list of formulas.
- Get advice from other painters on difficult color matches.
- Maintain a color library using spray-out test cards to record color variants and tints.

You can minimize the amount of leftover paint by refining your estimating, measuring and mixing system. Record amounts at each step to help with troubleshooting as well as for VOC reporting.

***Improve paint measurement and mix only what you need***

- Mix on a scale;
- Consider using a computerized mixing system to:
  - track product and VOC usage; and
  - easily generate reports required by the local air district;
- Consider using automated paint dispensers to minimize over pours.

***Track paint use from start to finish and troubleshoot***

- Record the estimated amount, the actual amount of paint mixed, and the amount of paint leftover for each job;
- Compare your estimate with the amount of paint used, and then look for ways to reduce leftover paint;
- Compare paint orders with workload.
  - Review invoices from paint orders and track them month to month.
  - If ordering seems too high, find out why and troubleshoot.

***When leftover paint can't be avoided – tips to reduce waste disposal***

- Mix leftover base coat into the ground coat under similar colored base coats to cover hard-to-hide colors. Use these paints before applying transparent colors, yellows, pink and pearls.
- Use leftover paint for painting door interiors and edging or jambing.
- For popular colors, save mixed paint for later use on jambs or for more coverage under similar base colors.

***Minimize paint transfers***

Every time paint is poured from one container to another, an ounce or more of paint may stick to the container and be lost. If you generate waste at this step, you may be able to reduce transfer waste with:

- reusable Teflon mixing cups or
- disposable paint gun liners.

***Disposable calibrated paint gun liners***

Using paint gun liners can reduce paint and solvent waste, and provide cost savings. One product, the Paint Preparation System (PPS) (see vendor list), consists of a disposable liner and cap inserted into a reusable plastic shell that attaches to a gravity-fed paint gun. Paint, reducers, hardeners, and other additives are poured directly into the liner and then mixed. Unused paint or primer can be saved in the disposable liner for later use.

The benefits of using the paint gun liner system include:

- Paint waste is reduced because it is not transferred from a separate mixing cup,
- Saves time when mixing more than one batch of coating at a time,
- Easier and faster paint gun cleaning,
- Cleaning requires much less solvent and generates less waste, and

- Reduces product purchase and waste disposal costs.

You should consider the following:

- The liners are refillable but cannot be cleaned with solvents for reuse.
- Used liners contribute to your shop's overall waste generation and must be managed properly. Most shops have found them to be non-hazardous waste. If you are not sure how to manage waste liners, check with your local Certified Unified Public Agency (CUPA).

## **The Painting Process**

Review your shop's painting process for opportunities to improve or fine tune your procedures. Start by reviewing equipment operations.

- Follow the paint and the spray gun manufacturers' instructions,
- Operate spray equipment within regulated pressure limits,
- Follow operating and maintenance procedures for your spray booth and curing equipment.

### ***Improve efficiency and productivity***

- When possible, plan primer and clear coat work on multiple cars back-to-back to reduce labor, paint, and solvent waste.
- Consider using tintable primer systems to improve color matches and to get complete coverage in fewer coats.
- Schedule waterborne primer work for the end of the day. The primer is cured and ready for the base coat by the next morning.

### ***Remove the body part from the vehicle before painting***

You can improve shop efficiency and reduce waste by removing the part from the vehicle before painting whenever possible.

Advantages include:

- Eliminating the need for masking;
- Reducing overspray and improving transfer efficiency when parts like hoods and trunks can be oriented perpendicular to the spray gun;
- Streamlining shop processes by moving a car part from one station to the next rather than moving a vehicle.



Remove part and schedule like jobs together

### ***Hands-on training***

Slight changes in spray technique can help you get more paint on the part and less in the booth filters. Hands-on training from paint manufacturers' training centers and other sources will help you to improve your spray application technique and transfer efficiency. This will help reduce paint waste and VOC emissions.

### **Resources for technique training and paint waste reduction**

Air Resources Board	<a href="http://www.arb.ca.gov/cap/handbooks/autorefinishingsmall.pdf">http://www.arb.ca.gov/cap/handbooks/autorefinishingsmall.pdf</a>	916-327-7211 <a href="mailto:mfenske@arb.ca.gov">mfenske@arb.ca.gov</a>	Automotive Refinishing Self-Inspection Handbook (English)
Air Resources Board	<a href="http://www.arb.ca.gov/cap/handbooks/autorefinishingspanishsmall.pdf">http://www.arb.ca.gov/cap/handbooks/autorefinishingspanishsmall.pdf</a>	916-327-7211 <a href="mailto:mfenske@arb.ca.gov">mfenske@arb.ca.gov</a>	Automotive Refinishing Self-Inspection Handbook (Spanish)
C-CAR Greenlink	<a href="http://www.ccar-greenlink.org/cshops/">http://www.ccar-greenlink.org/cshops/</a>	888-GRN-LINK 888-476-5465	Online Virtual Shops P2 and Compliance
I-CAR	<a href="http://www.i-car.com/">http://www.i-car.com/</a>	800-422-7872	training centers
California Autobody Asso	<a href="http://www.calautobody.com/?schools">http://www.calautobody.com/?schools</a>	916-646-8111	Community colleges and trade schools
Iowa Waste Reduction Center (IWRC)	<a href="http://www.iwrc.org/programs/STAR.cfm">http://www.iwrc.org/programs/STAR.cfm</a>	800-422-3109	Spray Technique Analysis and Research (STAR) training centers training to enhance technique

### ***Upgrade your spray equipment - HVLP***

The majority of spray technicians use high velocity low pressure (HVLP) spray guns, but there may be significant differences in performance between manufacturers. When looking at new spray equipment, consider the following:

- Has the spray gun undergone independent testing to verify product claims? The EPA's Environmental Technology Verification program has evaluated a number of spray guns. For more information, check the following websites:
  - <http://www.epa.gov/etv/verifications/vcenter6-16.html>  
for verification reports on high transfer efficiency spray guns
  - <http://www.epa.gov/etv/verifications/vcenter6-4.html>  
for verification reports on HVLP spray guns
- Check trade publications and ask other technicians for performance information.
- Does the gun operate effectively within the required pressure range?
- Can it achieve the required transfer efficiency?
- Is the spray gun approved for use by your local air district?

***Newer spray gun technology*** available on the market today may outperform the HVLP in transfer efficiency, ease of use, and finish quality. Independent tests demonstrated that these technologies can achieve equivalent or better transfer efficiency than HVLP equipment. Several California air districts including the South Coast Air Quality Management District (SCAQMD) have approved these technologies for use in automotive refinishing shops.

### ***Maintain your spray booth and components***

Routine maintenance of your paint booth will help produce cleaner paint jobs, reduce waste and protect workers' health. This results in lower labor costs and reduced operation and material costs.

Set up a routine maintenance schedule to include the following:

- Change filters  
With continual use, intake and exhaust filters get clogged with dirt and paint overspray. Clogged filters can cause poor finish quality and may present a fire hazard. A clean filter helps to keep fans clean and air circulating.
  - Check the manometer daily for pressure loss which will indicate clogged filters
  - Follow a filter replacement schedule based on calendar or usage hours
  - Use high efficiency filters recommended by the spray booth manufacturer
  - Select filters that are easy to replace
  - Properly manage and dispose of waste spray booth filters. Waste filters may not be hazardous, see the DTSC fact sheet "Hazardous Waste in Auto Body Shops" to learn how to make this determination.
- Check fans  
Overspray can build up on fans, reducing airflow away from finish surface and worker. Dirty fan blades can lead to imbalance and wear, possibly damaging the fan.
  - Clean fan blades regularly
  - Follow recommended maintenance schedule
  - Power off unit and lock-out power supply before servicing unit
- Keep the spray booth clean
  - Everything that enters the spray booth should be as dirt and dust-free as possible for the cleanest finish;
  - Clean booth walls after each job or cover with plastic.

### ***Consider using waterborne paints***

Waterborne paint systems have improved in appearance, durability, and longevity over the past 5 years and they continue to improve. A limited number of shops in the United States successfully use waterborne primers and realize the benefits from decreased hazardous waste disposal costs, improved worker health and safety, and improved environmental compliance.

For areas of California that need to reduce the impacts of VOCs on air quality and because of the high price of exempt paint reducers like PCBTF, a shift to waterborne paint systems may be only a few years away. The Air Resources Board adopted a suggested control measure (SCM) that provides a model for air districts when they adopt or amend their rules. The proposed SCM is intended to improve consistency and enforceability of existing rules statewide and may reduce the allowable VOC limits in coatings and paint gun cleaning solvents.

### ***Incentive Programs***

Employees can be part of the solution to minimizing waste in the shop, if you:

- Encourage employees to conserve materials;
- Ask for their ideas on more efficient use of shop materials, such as paint additives, solvents, masking, and sand paper to reduce direct costs and waste;

- Consider offering incentives such as bonuses and sharing savings with employees who significantly contribute to waste reduction goals. Substantial cost savings can result from using less materials and generating less waste.

Dave Creech, owner of Quality Body Works in Eureka, distributed more than \$3000 of quarterly incentive bonuses to employees who helped reduce material waste in the shop.

## Vendor list

*(Other vendors may provide similar or identical products and services. Mention of trade names, products, or services does not convey, and should not be interpreted as conveying any government approval, endorsement, or recommendation.)*

3M	<a href="http://www.3m.com/automotive/">http://www.3m.com/automotive/</a> click on "Product Catalog" listed on left menu bar	888-3M HELPS 888-364-3577	Paint Preparation System (PPS) and other automotive aftermarket products
BASF	<a href="http://www.basf.com/corporate/cindustriesautomotive.html">http://www.basf.com/corporate/cindustriesautomotive.html</a> then click "automotive refinishing" then "color systems."	800-227-3593	SmartTrak® computerized mixing system and SmartScan® hand held spectrophotometer
DeVilbiss	<a href="http://www.autorefinishdevilbiss.com/">http://www.autorefinishdevilbiss.com/</a>	800-445-3988	(GFG-670) PLUS™ high efficiency spray gun
DuPont	<a href="http://www.performancecoatings.dupont.com/">http://www.performancecoatings.dupont.com/</a> click "automotive finishes" then "color."	800-338-7668	VINdicator™ color matching system, Acquire RX™ and ChromaVision™ hand-held spectrophotometers, and TopMix computerized mixing system
X-Pert	<a href="http://www.x-pertinc.com/">http://www.x-pertinc.com/</a>	888-345-8232	Paint Mixing Systems automatic pouring system
PPG	<a href="http://www.ppg.com/cr-refinish/phase1/frnColorMatch.asp">http://www.ppg.com/cr-refinish/phase1/frnColorMatch.asp</a>	800-624-4032	TouchMix® computerized mixing system and Proflet® II spectrophotometer
PPG	<a href="http://www.ppg.com/gridppg/">http://www.ppg.com/gridppg/</a>	Not applicable	Access online color formulations
Sherwin-Williams	<a href="http://www.sherwin-automotive.com/">http://www.sherwin-automotive.com/</a>	800-SW ULTRA 800-798-5872	Squeegee Prime™ NP75
Sherwin-Williams	<a href="http://www.sherwin-automotive.com/formula/">http://www.sherwin-automotive.com/formula/</a>	Not applicable	FormulaExpress™ online color match information
SATAjet®	<a href="http://www.sata.com/usa/">http://www.sata.com/usa/</a>	800-533-8016	RP™ high performance spray gun

## Hazardous Waste Regulatory Requirements

For information on regulatory requirements contact your local [CUPA](http://www.dtsc.ca.gov/InformationResources/local_contacts.cfm) online at [http://www.dtsc.ca.gov/InformationResources/local\\_contacts.cfm](http://www.dtsc.ca.gov/InformationResources/local_contacts.cfm) or contact the [Department of Toxic Substances Control \(DTSC\)](http://www.dtsc.ca.gov/ContactDTSC/duty_officers.cfm) at (800) 728-6942, [http://www.dtsc.ca.gov/ContactDTSC/duty\\_officers.cfm](http://www.dtsc.ca.gov/ContactDTSC/duty_officers.cfm)

**To get an EPA ID number, contact:**

DTSC  
Generator Information Services Unit  
(916) 255-1136  
(800) 618-6942

**For additional information on auto body and paint shop pollution prevention practices and a list of available publications contact:**

DTSC  
Office of Pollution Prevention and Technology Development  
P.O. Box 806  
Sacramento, CA 95812-0806  
(916) 322-3670  
(800) 700-5854  
<http://www.dtsc.ca.gov/PollutionPrevention/index.cfm>

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